United States Patent [19]

Grollimund et al.

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[54] **A ROBOTIC HAND**

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Related U.S. Application Data

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[52] **U.S. Cl.** **242/72.1**; 414/736; 414/911

[58] **Field of Search** ..... 242/58.4, 78.8, 72 R, 242/72.1, 67.3 R; 901/6; 414/736, 744 A, 751, 776, 908, 911; 279/2 R, 2 A

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,062,455 12/1977 Flatau 414/735

4,626,013 12/1986 Barrows ..... 414/736 X

4,708,574 11/1987 Conboy et al. ..... 414/626 X

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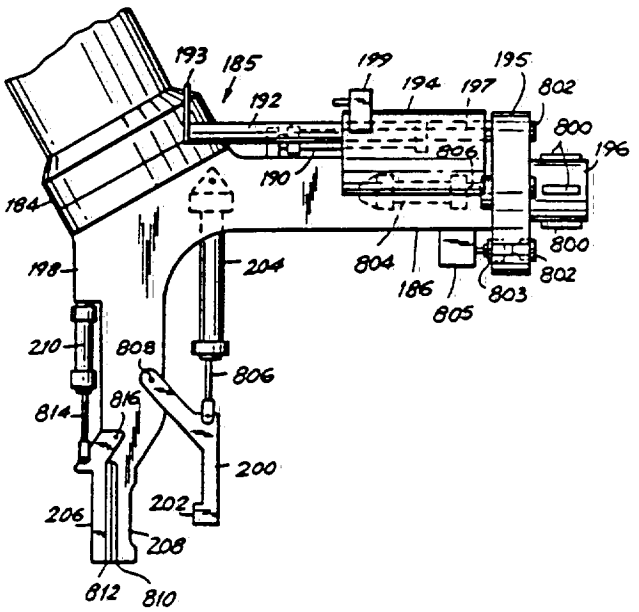
[57] **ABSTRACT**

A robotic hand has two sections disposed 90 degrees apart. One section has a bobbin core-engaging device for the purpose of lifting and handling the bobbin. This section also has a bobbin transfer means for removing the bobbin from the bobbin core engaging device. The second section of the robotic hand has a first fixed finger and a second movable finger. The fingers are used for clamping at least one lamination thickness of paper from the bobbin therebetween and holding it while the robotic hand is indexed to thread a processing machine with the paper from the bobbin. The second section also has a bobbin core removing means formed by the first fixed finger and a movable third finger. The first and third fingers cooperate for engaging the bobbin core and removing it from the machine after all of the paper has been removed therefrom.

14 Claims, 11 Drawing Sheets



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